Space Weather Highlights **SWPC PRF 2243**
20 August - 26 August 2018 **27 August 2018**

Solar activity was at very low levels. Regions 2719 (S07, L=131, class/area Cro/040 on 23 Aug) and 2720 (N08, L=136, class/area Dao/100 on 25 Aug) developed on the solar disk on 18 Aug and 23 Aug respectively. Both regions were responsible for several low level B-class flares. The largest was a B4 flare at 25/1048 UTC from Region 2720. Other activity included two coronal mass ejections (CME) observed on 19 and 20 Aug. The first was a narrow CME off the SW limb at 19/0812 UTC in SOHO/LASCO C2 imagery. The CME originated from a filament eruption near S09W06 at 19/0542 UTC. The latter CME was caused by a filament eruption at approximately 20/1100 UTC from the NW quadrant. An associated faint partial halo CME was observed off the W/SW limb at 20/2136 UTC in C2 imagery. WSA/ENLIL modelling of the events showed only weak effects from possible glancing blows late on 21 Aug and late on 24 Aug.

No proton events were observed at geosynchronous orbit.

The greater than 2 MeV electron flux at geosynchronous orbit reached high levels throughout the period. The largest flux of the period was 10,300 pfu observed at 21/2150 UTC.

Geomagnetic field activity ranged from quiet to G3 (Strong) geomagnetic storm levels. The period began under the influence of a negative polarity coronal hole high speed stream (CH HSS). Solar wind speeds were elevated to near 670 km/s with total field initially at 12 nT on 20 Aug. By 21 Aug, solar wind speed was in decline while total field was at 5 nT or less. Solar wind slowly decreased over the next few days as nominal conditions were reached by 23 Aug. The geomagnetic field responded with quiet to active levels on 20 Aug, quiet to unsettled levels on 21-22 Aug and quiet levels on 23 Aug. By 24 Aug, a small discontinuity could be seen in the total field. A small increase to 7 nT was observed at 24/1116 UTC while the Bz component deflected southward to -6 nT, however the solar wind speed continued to decrease to near 325 km/s by the end of the day. As a result, quiet to unsettled levels were observed on 24 Aug. By 25 Aug, solar wind speed increased briefly to 460 km/s at 25/1305 UTC before declining once again, however total field began to increase beginning at 25/1210 UTC as effects from the 20 Aug CME were beginning. By 26 Aug, total field increased to 18 nT and remained there for approximately 12 hours. The Bz component was mostly negative reaching a maximum of -17 nT for approximately 24 hours beginning at 25/1600 UTC. Solar wind speed once again showed an increase at 26/0730 UTC from 370 km/s to near 550 km/s by the periods end as the solar wind stream was transitioning into a positive polarity CH HSS. The geomagnetic field responded with quiet to active levels on 25 Aug and unsettled to G3 (Strong) storm levels on 26 Aug.

Space Weather Outlook
27 August - 22 September 2018

Solar activity is expected to be at very low levels with a slight chance for C-class flare activity on 27-29 Aug and again on 11-22 Sep as Regions 2719 and 2720 return to the visible disk. Very

low levels are expected for the rest of the forecast period.

No proton events are expected at geosynchronous orbit.

The greater than 2 MeV electron flux at geosynchronous orbit is expected to be at high levels on 27 Aug-03 Sep, 12-15 Sep, and again on 17-19 Sep due to recurrent CH HSS influence.

Geomagnetic field activity is expected to be at unsettled to active levels on 27-30 Aug, 01-02 Sep, 07 Sep, 11-17 Sep, and 22 Sep with G1 (Minor) geomagnetic storm levels expected early on 27 Aug due to CH HSS activity.

Daily Solar Data

Date	Radio Flux 10.7cm	Sun spot No.	Sunspot Area (10^{-6} hemi.)	X-ray Background Flux		Flares						
						X-ray			Optical			
						C	M	X	S	1	2	3	4
20 August	68	15	10	A1.0	0	0	0	0	0	0	0	0	0
21 August	68	15	10	A1.3	0	0	0	0	0	0	0	0	0
22 August	67	12	10	A0.0	0	0	0	0	0	0	0	0	0
23 August	70	15	40	A0.0	0	0	0	0	0	0	0	0	0
24 August	72	29	60	A0.0	0	0	0	1	0	0	0	0	0
25 August	72	31	130	A1.9	0	0	0	2	0	0	0	0	0
26 August	71	26	70	A1.2	0	0	0	0	0	0	0	0	0

Daily Particle Data

Date	Proton Fluence (protons/cm^2 -day -sr)			Electron Fluence (electrons/cm^2 -day -sr)		
	>1 MeV	>10 MeV	>100 MeV	>0.6 MeV	>2MeV	>4 MeV
20 August	2.3e+06	1.7e+04	3.4e+03	7.1e+07		
21 August	2.9e+06	1.6e+04	3.4e+03	3.5e+08		
22 August	2.1e+06	1.7e+04	3.5e+03	1.9e+08		
23 August	1.6e+06	1.8e+04	3.8e+03	1.7e+08		
24 August	1.7e+06	1.7e+04	3.6e+03	1.1e+08		
25 August	1.6e+06	1.7e+04	3.5e+03	3.1e+07		
26 August	5.7e+06	1.7e+04	3.4e+03	1.2e+08		

Daily Geomagnetic Data

Date	Middle Latitude Fredericksburg		High Latitude College		Estimated Planetary	
	A	K-indices	A	K-indices	A	K-indices
20 August	15	4-4-1-2-3-3-3-2	21	4-4-2-4-4-4-3-2	14	4-3-2-2-3-3-4-2
21 August	6	2-1-2-2-2-1-1-2	10	2-2-4-4-2-1-0-1	7	3-2-2-2-1-1-1-2
22 August	8	2-3-1-1-3-2-1-2	5	2-2-3-1-1-1-0-1	6	2-3-2-1-2-1-0-2
23 August	5	2-1-2-1-2-1-2-1	2	1-1-2-0-1-0-1-0	5	2-1-2-1-1-1-1-1
24 August	7	0-1-2-2-3-1-3-1	11	0-0-1-3-5-3-1-0	5	0-1-2-2-3-1-1-1
25 August	12	1-1-3-3-3-2-2-4	6	2-2-1-1-1-1-2-3	11	1-1-2-2-2-1-3-4
26 August	34	4-4-6-4-4-5-4-2	90	4-5-8-7-7-6-4-3	80	6-7-7-5-5-6-5-3

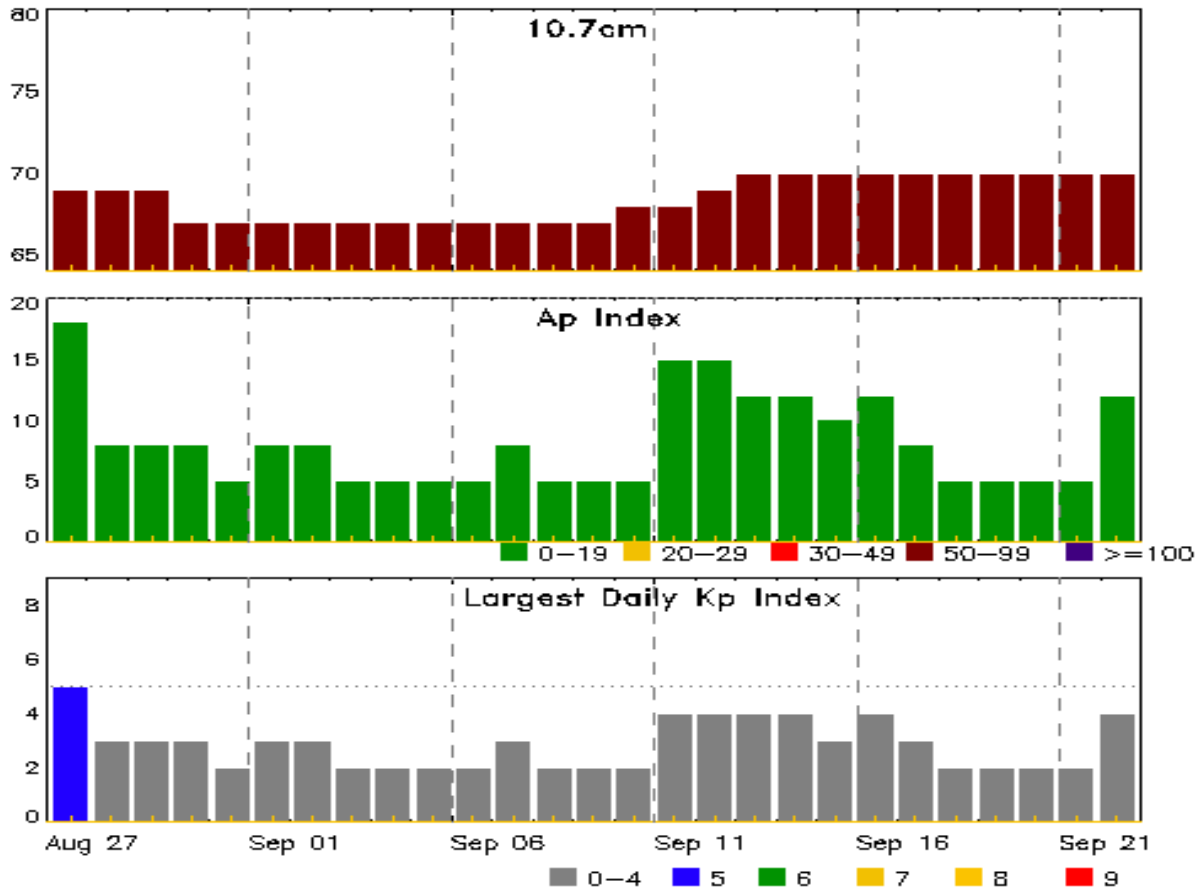
Alerts and Warnings Issued

Date & Time of Issue UTC	Type of Alert or Warning	Date & Time of Event UTC
20 Aug 0036	WARNING: Geomagnetic K = 4	20/0036 - 1400
20 Aug 0300	ALERT: Geomagnetic K = 4	20/0259
20 Aug 1916	CONTINUED ALERT: Electron 2MeV Integral Flux >= 1000pfu	18/1410
20 Aug 1920	WARNING: Geomagnetic K = 4	20/1919 - 21/0000
20 Aug 1923	ALERT: Geomagnetic K = 4	20/1923
21 Aug 0636	CONTINUED ALERT: Electron 2MeV Integral Flux >= 1000pfu	18/1410
22 Aug 0956	CONTINUED ALERT: Electron 2MeV Integral Flux >= 1000pfu	18/1410
23 Aug 1035	CONTINUED ALERT: Electron 2MeV Integral Flux >= 1000pfu	18/1410
24 Aug 1231	CONTINUED ALERT: Electron 2MeV Integral Flux >= 1000pfu	18/1410
25 Aug 1716	CONTINUED ALERT: Electron 2MeV Integral Flux >= 1000pfu	18/1410
25 Aug 2109	WARNING: Geomagnetic K = 4	25/2109 - 26/0600
25 Aug 2143	ALERT: Geomagnetic K = 4	25/2143
25 Aug 2146	WARNING: Geomagnetic K = 5	25/2146 - 26/0600
26 Aug 0154	ALERT: Geomagnetic K = 5	26/0154
26 Aug 0213	EXTENDED WARNING: Geomagnetic K = 4	25/2109 - 26/1500
26 Aug 0241	WARNING: Geomagnetic K = 6	26/0241 - 0900
26 Aug 0241	EXTENDED WARNING: Geomagnetic K = 5	25/2146 - 26/1200
26 Aug 0257	ALERT: Geomagnetic K = 6	26/0257
26 Aug 0346	ALERT: Geomagnetic K = 5	26/0346
26 Aug 0425	ALERT: Geomagnetic K = 6	26/0425
26 Aug 0444	WARNING: Geomagnetic K>= 7	26/0444 - 0900
26 Aug 0601	ALERT: Geomagnetic K = 7	26/0559
26 Aug 0638	ALERT: Geomagnetic K = 5	26/0637
26 Aug 0706	ALERT: Geomagnetic K = 6	26/0706
26 Aug 0707	EXTENDED WARNING: Geomagnetic K = 6	26/0241 - 1200

Alerts and Warnings Issued

Date & Time of Issue UTC	Type of Alert or Warning	Date & Time of Event UTC
26 Aug 0739	ALERT: Geomagnetic K = 7	26/0738
26 Aug 0739	EXTENDED WARNING: Geomagnetic K>= 7	26/0444 - 1200
26 Aug 1133	EXTENDED WARNING: Geomagnetic K = 5	25/2146 - 26/1800
26 Aug 1133	EXTENDED WARNING: Geomagnetic K = 4	25/2109 - 26/2359
26 Aug 1134	ALERT: Geomagnetic K = 5	26/1134
26 Aug 1421	ALERT: Geomagnetic K = 5	26/1418
26 Aug 1541	CONTINUED ALERT: Electron 2MeV Integral Flux >= 1000pfu	18/1410
26 Aug 1602	ALERT: Geomagnetic K = 5	26/1602
26 Aug 1614	EXTENDED WARNING: Geomagnetic K = 5	25/2146 - 26/2359
26 Aug 1614	WARNING: Geomagnetic K = 6	26/1613 - 1800
26 Aug 1625	ALERT: Geomagnetic K = 6	26/1623
26 Aug 2023	ALERT: Geomagnetic K = 5	26/2020
26 Aug 2036	WARNING: Geomagnetic K = 6	26/2035 - 2359
26 Aug 2339	EXTENDED WARNING: Geomagnetic K = 5	25/2146 - 27/0900
26 Aug 2349	EXTENDED WARNING: Geomagnetic K = 4	25/2109 - 27/0900

Twenty-seven Day Outlook



Date	Radio Flux 10.7cm	Planetary A Index	Largest Kp Index	Date	Radio Flux 10.7cm	Planetary A Index	Largest Kp Index
27 Aug	69	18	5	10 Sep	68	5	2
28	69	8	3	11	68	15	4
29	69	8	3	12	69	15	4
30	67	8	3	13	70	12	4
31	67	5	2	14	70	12	4
01 Sep	67	8	3	15	70	10	3
02	67	8	3	16	70	12	4
03	67	5	2	17	70	8	3
04	67	5	2	18	70	5	2
05	67	5	2	19	70	5	2
06	67	5	2	20	70	5	2
07	67	8	3	21	70	5	2
08	67	5	2	22	70	12	4
09	67	5	2				

Energetic Events

	Time			X-ray		Optical Information			Peak Radio Flux		Sweep Freq Intensity	
Date	Begin	Max	Half Max	Class	Integ Flux	Imp/ Brtns	Location Lat CMD	Rgn #	245	2695	II	IV

No Events Observed

Flare List

	Time				Optical		
Date	Begin	Max	End	X-ray Class	Imp/ Brtns	Location Lat CMD	Rgn #
23 Aug	2023	2038	2046	A6.8			2719
24 Aug	1247	1250	1257	B1.0			2720
24 Aug	2154	2158	2201	B1.6	SF	S07W21	2719
25 Aug	0200	0205	0209	B2.6			2720
25 Aug	0304	0309	0312	B3.4			2720
25 Aug	0323	0332	0334	B1.4			2719
25 Aug	0521	0525	0529	B1.8			2720
25 Aug	0701	0704	0706	B1.4	SF	N07W28	2720
25 Aug	0736	0740	0754	B1.0			2720
25 Aug	0802	0813	0830	B2.6			2720
25 Aug	1035	1048	1101	B4.1			2720
25 Aug	B1104	U1104	A1105		SF	N09W30	2720
25 Aug	1829	1833	1837	B1.0			2720
25 Aug	2124	2128	2130	B1.9			2720

Region Summary

	Location		Sunspot Characteristics					Flares							
		Helio	Area	Extent	Spot	Spot	Mag	X-ray			Optical				
Date	Lat CMD	Lon	10^{-6} hemi.	(helio)	Class	Count	Class	C	M	X	S	1	2	3	4
			Region 2718												
14 Aug	S08E49	192	10	3	Bxo	2	B								
15 Aug	S07E36	192	10	3	Cro	2	B								
16 Aug	S08E23	191	10	2	Bxo	2	B								
17 Aug	S07E10	191	20	1	Hrx	1	A								
18 Aug	S07W03	192	10	1	Axx	1	A								
19 Aug	S06W19	195	plage												
20 Aug	S06W34	197	plage												
21 Aug	S06W49	198	plage												
22 Aug	S06W64	200	plage												
23 Aug	S06W79	202	plage												
								0	0	0	0	0	0	0	0

Crossed West Limb.
Absolute heliographic longitude: 192

			Region 2719												
19 Aug	S06E43	133	10	3	Bxo	5	B								
20 Aug	S07E29	134	10	4	Bxo	5	B								
21 Aug	S12E15	135	10	5	Bxo	5	B								
22 Aug	S06E03	133	10	1	Axx	2	A								
23 Aug	S07W08	131	40	5	Cro	5	BG								
24 Aug	S08W21	131	30	5	Cro	4	B				1				
25 Aug	S06W36	133	30	5	Cro	4	B								
26 Aug	S06W53	136	10	1	Axx	1	A								
								0	0	0	1	0	0	0	0

Still on Disk.
Absolute heliographic longitude: 133

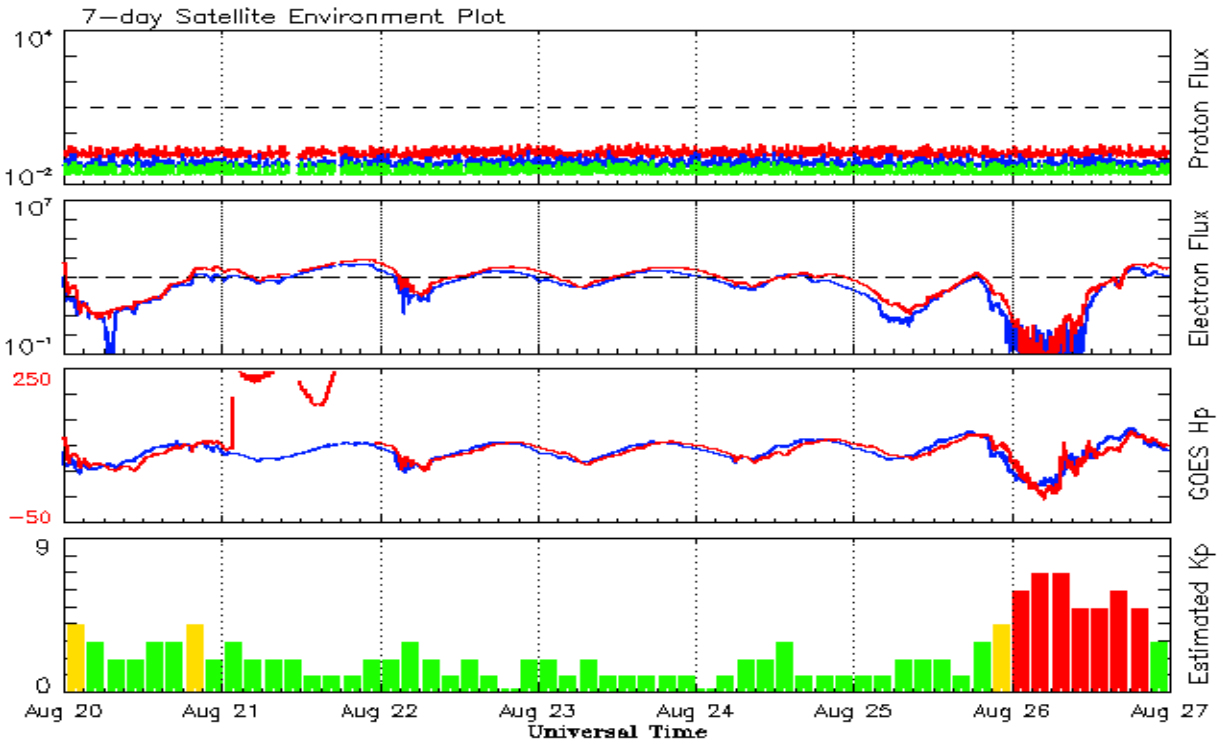
			Region 2720												
24 Aug	N08W24	133	30	4	Dro	5	B								
25 Aug	N08W39	136	100	6	Dao	7	B				2				
26 Aug	N08W55	138	60	8	Cso	5	B								
								0	0	0	2	0	0	0	0

Still on Disk.
Absolute heliographic longitude: 133

Recent Solar Indices (preliminary)
Observed monthly mean values

	Sunspot Numbers					Radio Flux		Geomagnetic	
	Observed values		Ratio	Smooth values		Penticton	Smooth	Planetary	Smooth
Month	SEC	RI	RI/SEC	SEC	RI	10.7 cm	Value	Ap	Value
				2016					
August	50.4	30.1	0.60	34.2	21.6	85.0	85.5	10	11.2
September	37.4	26.8	0.72	32.1	19.9	87.8	83.7	16	11.3
October	30.0	20.0	0.67	31.1	18.9	86.1	82.5	16	11.6
November	22.4	12.8	0.57	29.4	17.9	78.7	81.1	10	11.6
December	17.6	11.1	0.64	28.1	17.1	75.1	80.0	10	11.4
				2017					
January	28.1	15.7	0.55	27.3	16.7	77.4	79.4	10	11.3
February	22.0	15.8	0.71	25.5	15.9	76.9	78.7	10	11.3
March	25.4	10.6	0.42	24.6	15.4	74.6	78.6	15	11.5
April	30.4	19.4	0.64	24.3	14.9	80.9	78.4	13	11.5
May	18.1	11.3	0.62	23.1	14.0	73.5	77.7	9	11.3
June	18.0	11.5	0.64	22.0	13.3	74.8	77.3	7	11.3
July	18.8	10.7	0.59	20.8	12.6	77.7	76.8	9	11.0
August	25.0	19.6	0.80	19.7	11.8	77.9	76.3	12	10.7
September	42.2	26.2	0.62	18.6	11.0	92.0	75.9	19	10.3
October	16.0	7.9	0.49	16.8	10.0	76.4	75.1	11	9.8
November	7.7	3.4	0.44	15.7	9.2	72.1	74.6	11	9.5
December	7.6	4.9	0.64	15.7	9.1	71.5	74.4	8	9.4
				2018					
January	7.8	4.1	0.51	15.0	8.6	70.0	74.0	6	9.3
February	16.0	6.4	0.40			72.0		7	
March	6.0	1.5	0.25			68.4		8	
April	7.0	5.3	0.76			70.0		7	
May	15.0	7.9	0.53			70.9		8	
June	19.7	9.5	0.48			72.5		7	
July	1.3	1.0	0.77			69.7		6	

Note: Values are final except for the most recent 6 months which are considered preliminary. Cycle 24 started in Dec 2008 with an RI=1.7.



Weekly Geosynchronous Satellite Environment Summary
Week Beginning 20 August 2018

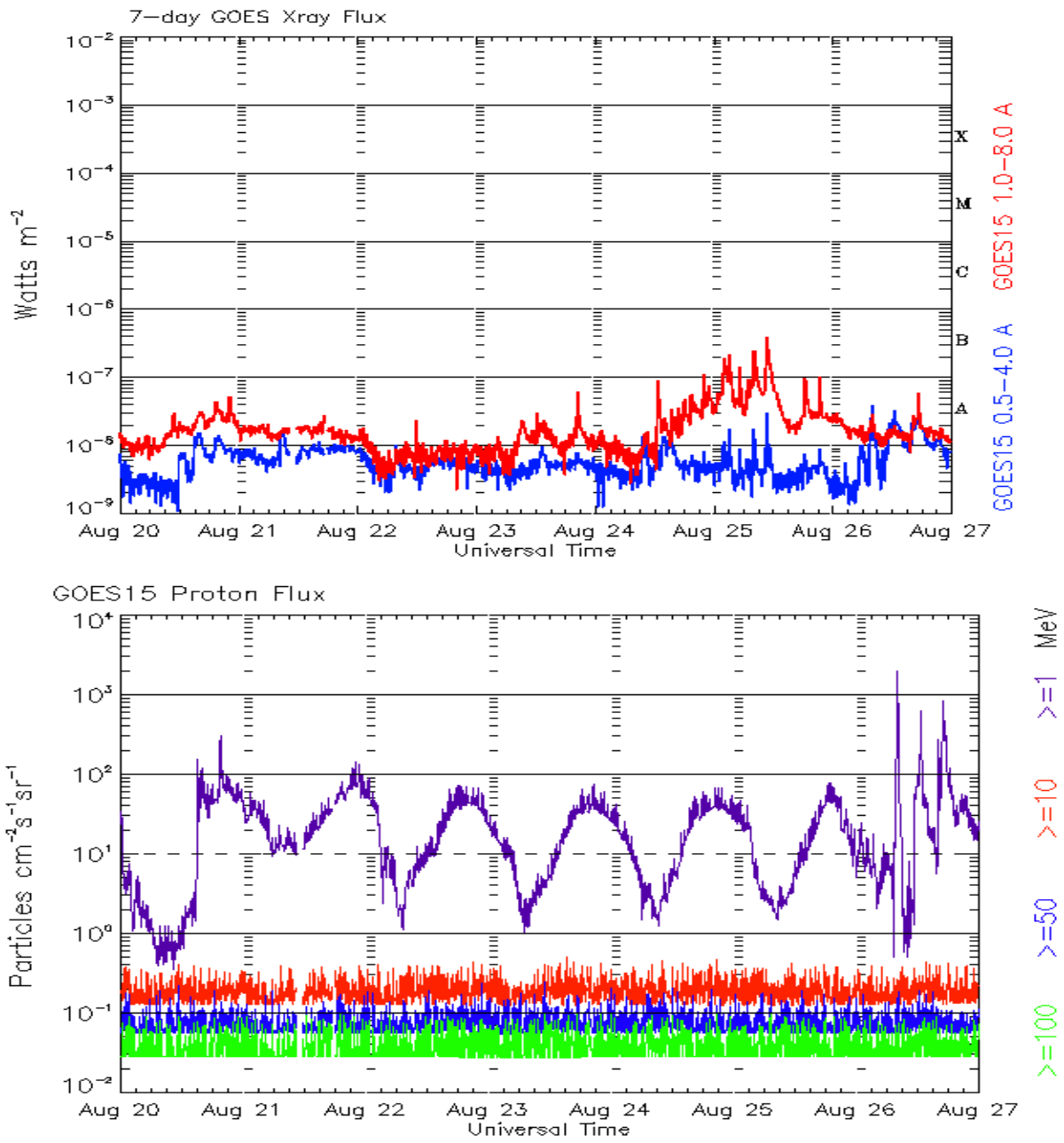
The proton flux plot contains the five-minute averaged integral proton flux (protons/cm^2-sec -sr) as measured by the SWPC Primary GOES satellite, near West 75, for each of three energy thresholds: greater than 10, 50, and 100 MeV.

The electron flux plot contains the five-minute averaged integral electron flux (electrons/cm^2-sec -sr) with energies greater than 2 MeV by the SWPC Primary GOES satellite.

The Hp plot contains the five minute averaged Hp magnetic field component in nanoteslas (nT) as by the SWPC Primary GOES satellite. The Hp component is parallel to the spin axis of the satellite, which is nearly parallel to the Earth's rotation axis.

The Estimated 3-hour Planetary Kp-index is derived at the NOAA Space Weather Prediction Center using data from the following ground-based magnetometers: Boulder, Colorado; Chambon la Foret, France; Fredericksburg, Virginia; Fresno, California; Hartland, UK; Newport, Washington; Sitka, Alaska. These data are made available thanks to the cooperative efforts between SWPC and data providers around the world, which currently includes the U.S. Geological Survey, the British Geological Survey, and the Institut de Physique du Globe de Paris.

The data included here are those now available in real time at the SWPC and are incomplete in that they do not include the full set of parameters and energy ranges known to cause satellite operating anomalies. The proton and electron fluxes and Kp are 'global' parameters that are applicable to a first order approximation over large areas. H parallel is subject to more localized phenomena and the measurements generally are applicable to within a few degrees of longitude of the measuring satellite.



Weekly GOES Satellite X-ray and Proton Plots
Week Beginning 20 August 2018

The x-ray plots contains five-minute averages x-ray flux (Watt/m^2) as measure by the SWPC primary GOES X-ray satellite, usually at West 105 longitude, in two wavelength bands, 0.05 - 0.4 and 0.1 - 0.8 nm. The letters A, B, C, M and X refer to x-ray event levels for the 0.1 - 0.8 nm band.

The proton plot contains the five-minute averaged intergral flux units (pfu = protons/cm^2 -sec -sr) as measured by the primary SWPC GOES Proton satellite for each of the energy thresholds: >1, >10, >30, and >100 MeV. The P10 event threshold is 10 pfu at greater than 10 MeV.

Preliminary Report and Forecast of Solar Geophysical Data (The Weekly)

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Notice: The 27-day Outlook, Satellite Environment, X-ray and Proton plots have been redesigned. Comments and suggestions are welcome SWPC.Webmaster@noaa.gov

The Weekly has been published continuously since 1951 and is available online since 1997.

http://spaceweather.gov/weekly/ -- Current and previous year
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